PROGRESS

OF

MEDICAL SCIENCE.

MEDICINE.

UNDER THE CHARGE OF
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The Pathogenesis of Pernicious Anemia.—BERGER and TSUCHIGA (*Deut. Archiv f. klin. Med.*, 1909, xcvi, 252) have investigated cases of "cryptogenic" pernicious anemia—cases in which autopsy revealed no adequate cause of the anemia. Tallqvist has shown that Dibothriocephalus latus, which may cause an anemia similar to pernicious anemia, contains a powerfully hemolytic lipoid which can be extracted from the body of the worm, and has been able to demonstrate quite similar substances in the mucosa of the human digestive tract. Berger and Tsuchiga have pursued investigations of like nature, the results of which follow: (1) In pernicious anemia there is present in the gastric and intestinal mucosæ a lipoid substance soluble in ether, which is about ten times as powerful a hemolysin as the lipoid obtained from the normal mucosa. (2) Tested experimentally on animals, this lipoid shows weak but definite hemolytic properties, when administered either subcutaneously or by the stomach. That obtained from the normal mucosa exerts much less action or none at all. (3) The resulting anemia has the characteristics of pernicious anemia. (4) In dogs it is possible to obtain a lipoid similar in action to that in pernicious anemia, after first producing a gastro-intestinal catarrh. (5) The conclusion seems justified that the origin of the so-called cryptogenic form of pernicious anemia is to be found in the hemolytic action of this lipoid material, with secondary insufficiency of the bone marrow. (6) The place of origin of this powerfully hemolytic lipoid is in all probability the gastro-intestinal mucosa; the cause of its production seems to be a chronic inflammation of the mucosa.

Paroxysmal Hemoglobinuria.—Meyer and Emmerich (*Deut. Archiv f. klin. Med.*, 1909, xcvi, 287) have made a careful and comprehensive study of four cases of paroxysmal hemoglobinuria, confirming the work of Donath and Landsteiner, Hoover and Stone, and others, adding some that is new. They demonstrated the autohemolysin described by Donath and Landsteiner in all four of their cases. In some instances this has been missed by other observers, but the authors find that these negative results are probably due to the fact that often, and especially after a paroxysm, the complement is largely, if not quite, exhausted in the patient's blood. Hemolysis may, however, always be obtained by adding fresh complement. Local lowering of temperature leads to the formation of new complement in the body, probably locally, so that one attack does not prevent an early recurrence of the attack. A few days after a paroxysm the blood contains the normal amount of complement. During the paroxysm both systolic and diastolic blood pressures rise, even before the chill, to decline with the height of the fever. Between attacks there is a lymphocytosis of 30 per cent. to 35 per cent. During an attack the lymphocytes are diminished to 9 to 10 per cent., the decrease being parallel to the severity of the attack; at the same time the eosinophiles diminish or disappear from the blood. The dissolved hemoglobin is excreted partly as urobilinogen. The hemolytic amboceptor is bound to the red blood cells during cooling; it can be separated from them by repeated washing with warm normal saline solution. The red blood cells of patients with this disease are less resistant to changes in temperature and to dilute acid and dilute saponin solutions than those of a normal individual. Toward cold alone they are not more sensitive. Against the patient's hemolysin, however, his own red blood cells are more resistant than normal red corpuscles, which are usually agglutinated by the patient's serum. The serum of the hemoglobinuric possesses hemopsonins, since it causes normal macrophages to phagocytic red blood cells.

The Value of Schurmann's Color Reaction in Lues.—Galambos (*Deut. med. Woch.*, 1909, xxxv, 976) has investigated the color reaction for the diagnosis of syphilis, recently proposed by Schürmann. He finds that the reaction has nothing to do with the luetic or non-luetic nature of the patient's blood serum, and that it is, therefore, valueless as a diagnostic test.

Disseminated Miliary Tuberculosis of the Skin.—Wilder Tileston (*Archiv. Int. Med.*, 1909, iv, 21) calls attention to the eruption of disseminated miliary tuberculosis of the skin in infants and its importance. Of 32 cases of tuberculosis, osseous, glandular, pulmonary, intestinal, peritoneal, and meningeal, 7 (21 per cent.) showed the eruption. All the children with spots which came to autopsy were found to have miliary tuberculosis. The eruption consists of scattered discrete papules, which at the beginning are the size of pin-heads, and are soon capped by tiny vesicles with purulent contents. Later, the vesicle ruptures or dries up, and its place is taken by a crust. When healed, a tiny white scar surrounded by a halo of brownish pigment remains. They appear in crops so that all stages may be present at the same time. The distribution is fairly constant, the majority being situated on the buttocks, genitalia, and adjacent portions of the thighs. This is probably due to irritation by urine and feces, with consequent lowered resistance of the skin. Histologically, they vary from necrotic areas to tubercles and caseation. The cause is the tubercle bacillus. It was demonstrated in 70 per cent. of the cases. It probably reaches the skin by the blood stream. This specific eruption Tileston claims is of great diagnostic importance, and of even greater prognostic value than the positive tuberculin reaction. It indicates almost certainly a fatal outcome.

The Condition of the Pancreas in Achylia and Anacidity of the Stomach.—Ehrmann and Lederer (*Deut. med. Woch.*, 1909, xxxv, 879) point out the widespread belief, based on Pawlow's experiments, that hydrochloric acid is the specific stimulant of pancreatic secretion. In a large number of cases of achylia and anacidity they have tested the gastric contents and feces by Fuld's method and have found an actual increase of trypsin the rule. Their observations were made on 98 patients. The following results were obtained: (1) In achylia and anacidity the pancreatic function, contrary to the general supposition, is not diminished and is often increased. (2) It is, therefore, unnecessary to give hydrochloric acid to stimulate the pancreas in these conditions. (3) The author's experiments indicate that HCl is not the specific stimulant for pancreatic secretion. (4) With Volhard's oil breakfast and Ewald's breakfast, trypsin is usually demonstrable in achylia and anacidity. (5) In hyperacidity it is usually impossible to demonstrate trypsin in the gastric juice. (6) The more bile the gastric contents hold, the richer the trypsin. (7) Exceptions to (6) are not infrequent. (8) The absence or diminution of trypsin in hyperacidity is probably not due to acid alone, but possibly to an absolute decrease in ferment secretion and to the pyloric action. (9) Whether fats cause a physiological passage of pancreatic juice into the stomach of man, as is the case in the dog, remains undetermined.

The Influence of Radium on Uric Acid Salts.—Gudzent (*Deut. med. Woch.*, 1909, xxxv, 921) has shown in a previous communication that (1) uric acid forms two groups of primary salts, which can be separated solely by their different solubility. The first group (*a*-salt) changes at the time of its production into the second group (*b*-salt), which is more stable. The most probable cause of this change is an intramolecular rearrangement. (2) The *a*-salt, the first to be formed, has a solubility, which at 18° C. is 33.4 per cent. greater than the *b*-salt, while at 37° C. it is 33.9 per cent. more soluble. In the blood, owing to physical chemical laws, it so happens that the solubility of each of these salts is less than in water, the uric acid being present in the blood as the mononatrium urate. In gout the *b*-salt plays a prominent role. The author has sought a method to prevent the formation of the less soluble *b*-salt from the *a*-salt and also to change the *b*-salt back to the *a*-salt. He finds that radium is capable of inhibiting the formation of the *b*-salt. He also believes that he has been able, by this means, to convert the *b*-salt into the *a*-salt, which is twice as soluble as the former in the blood;

The Bacteriology of the Blood in Convalescence from Typhoid Fever.—Coleman and Buxton (*Jour. Med. Research*, 1909, xxi, 83) examined 46 cases of typhoid fever in regard to the bacillemia. They found in the majority of instances that the bacilli disappear from the blood as the temperature falls; that the defervescence and bacillemia are conterminous. They believe that the atrium of infection is the lymphatic structure of the intestinal wall. Thence the bacilli invade the general lymphatic system and spleen, where they grow chiefly and where relatively few are destroyed. A limited number may filter through into the blood in the incubation period of the disease. When the development of the bacilli has reached a certain grade, they overflow in quantity into the blood, where they are destroyed and their endotoxins set free. The symptoms represent the reaction to this. As the disease advances, the growth of the bacilli in the organs may be gradually controlled by the immunity processes, fewer bacilli are discharged into the blood, and the symptoms lessen in severity. At or about the time of defervescence the bacilli practically disappear from the blood. A few may filter through but the symptoms become less and convalescence proceeds. The post-typhoid elevations of temperature may be due to discharges of limited numbers into the blood, the growth in organs not being fully checked. The enlargement of the spleen and subsequent associated relapse suggest that the growth of bacilli there has been brought under only temporary control, and later, rapid multiplication occurs bacilli are discharged into the blood and destroyed, and the symptoms of a relapse become manifest.

A Comparison of the Guaiac and Benzidene Tests for Invisible Hemorrhage in Diseases of the Digestive Organs.—White (*Boston Med. and Surg. Jour.*, 1909, clx, 733) states that the clinical value of the guaiac test for occult blood is established beyond question. The method is simple, has given uniformly negative results with healthy persons on a meat-free diet, and has proved capable of detecting minute invisible hemorrhages in the gastro-intestinal tract. It is everywhere in use as an aid to the diagnosis of cancer and ulcer from the many diseases which may closely resemble them. The clinical value of the benzidene test is less well known. White thinks it important to recognize and use both methods. A preliminary step is necessary in both tests to exclude sources of error from food ferments. Acetic acid-ether extraction is best for the guaiac test, and boiling in the benzidene test. Metallic salts, potassium iodide, and charcoal must not be given when the stomach contents are to be submitted to the latter method. Meat, fish, and their juices must be excluded from the diet and no hemoglobin derivatives administered for two to four days previously. The stomach tube often introduces error by injuring the mucous membrane. Therefore, feces are more reliable. The Weber method is the best guaiac test for routine clinical work, namely, the addition of 10 drops of fresh tincture of guaiac and 30 drops of well-ozonized turpentine to an acetic acid-ether extract of 10 c.c. of feces. Schroeder's statement that each strength of blood solution has an optimum strength of guaiac tincture to obtain the deepest and clearest blue color is correct. It is well, therefore, to use 1, 2, and 10 drops of the usual guaiac tincture. Schlesinger and Holst's modification of the benzidin test is from two to five times as delicate as the guaiac test. It consists in adding 2 to 3 drops of the boiled feces mixture (a pea-sized piece in 4 c.c. of water) to a mixture of 10 drops of fresh benzidin solution (a knife tip of benzidin in 2 c.c. of glacial acetic acid) and 3 c.c. of commercial hydrogen peroxide. A clear green or blue appears when positive. A negative benzidin test has greater value than a negative guaiac test, and if both tests are used as a control much time will be saved by using the benzidin method first. It takes only two minutes, and if negative, renders further testing for blood unnecessary.

A Serum Reaction in Mental Diseases.—MUCH and HOLZMANN (*Münch. med. Woch.*, 1909, lvi, 1001), in a preliminary report, describe a characteristic serum reaction discovered in the examination of psychiatric cases, which promises much as an aid to diagnosis and prognosis. The principle of the reaction is simple: If human serum is added to cobra venom, hemolysis of washed human corpuscles is not prevented; but if serum be obtained from a patient suffering with dementia præcox or maniac depressive insanity, it is capable of inhibiting hemolysis. The technique used in performing the test is the following: 0.35 c.c. of serum is mixed with 0.25 c.c. of a 1 to 5000 solution of cobra venom (dilution made with physiological salt solution). To the mixture one adds 0.5 c.c. of a 10 per cent. suspension of human corpuscles and then places the tubes in the incubator for two hours and afterward in the ice chest for twenty-two hours. In examining the tubes, they are thoroughly shaken, and if the contents are turbid (lack of complete hemolysis), the result is positive. Controls must, of course, be made with normal serum. In a number of cases examined in this way, the reaction, which Much and Holzmann call the "psychoreaction," has been positive only in dementia præcox or maniac depressive insanity or in a member of a family in which either of these diseases or circular insanity (at times with epilepsy) has existed. Much and Holzmann promise a more detailed report later. They have been unable to obtain the reaction in the cerebrospinal fluid.

Sodium Chloride in Nephritic Œdema.—BLOOKER (*Deutsch. Arch. f. klin. Med.*, 1909, xcvi, 80) has made a careful study of six cases of nephritis with œdema with reference to sodium chloride intake and output. The value of restricted sodium chloride in the treatment of nephritic œdema is still, he believes, an open question. His observations lead him to the following conclusions: (1) Œdema in nephritis is caused by primary sodium chloride retention only in exceptional cases. (2) A salt-free diet is rarely of value in the treatment of nephritic œdema.

The Influence of Various Carbohydrates on Glycosuria.—WERBITZKI (*Ztschr. f. exp. Path. u. Ther.*, 1909, vi, 235) has made a very careful study of the sugar output in diabetes following the eating of various carbohydrate foods. He believes as a result of his observations and a study of the literature that various carbohydrate foods, even though they contain one and the same carbohydrate, may nevertheless lead to greatly varying sugar output. Of the foods rich in starch, oats occupies a conspicuous position, since in many cases of diabetes it leads to no increase in the sugar excreted in the urine. This leads to the supposition that a chemical difference exists between the carbohydrate of oats and that of most other foods. An oatmeal diet exercises a favorable influence in the majority of cases, not only on the glycosuria, but also on the general condition of the patient, and for this reason it should be more commonly tried in the treatment of diabetes. It should be used to the entire exclusion of other carbohydrates, at any rate until a fair trial has been given it.

The Cultivation of Spirocheta Pallida.—SCHERESCHEWSKY (*Deut. Med. Woch.*, 1909, xxxv, 835), in a preliminary note, gives the result of his attempts to cultivate Spirocheta pallida. Preivously it has been possible to grow the organisms in a collodion sac placed in the peritoneal cavity of an ape. As a culture medium Schereschewsky has used horse serum which he heated to 60° C. until a jelly-like consistency was attained. The culture was made by placing a fresh fragment of a luetic papilloma or condyloma in a centrifuge glass two-thirds full of the medium and corking it after the material had sunk to the bottom. In three to five days the organisms are found in large numbers in the medium. Schereschewsky believes he has made a successful transfer of his culture. A pure culture has not been obtained.

Alimentary Lipemia.—LEVA (*Berl. klin Woch.*, 1909, xlvi, 961) has proposed a simplified technique for the study of alimentary lipemia. In the method of Neisser and Braeuning the patient is given a definite quantity of cream; 15 c.c. of blood are then taken, after a given internal of time, from an arm vein, the serum is allowed to separate, and then the layer of "cream" on the serum is measured after standing four days in the ice chest. Leva examines the serum directly with dark field illumination, and estimates the degree of lipemia by means of the apparent number of fat droplets in the serum. As a test meal he proposes 45 grams of white bread, 20 grams of butter, and a cup of tea without milk. As yet, the number of patients examined is too small to permit one to draw any definite conclusions. He has tested olive oil and cream nutrient enemas in that way and finds that very little of the fat is absorbed. Leva confirms the work of other observers to the effect that hemoconia are in reality fatty particles.

Meat as a Source of Infection in Tuberculosis.—LITTLEJOHN (*Practitioner*, 1909, lxxxii, 843) states that the risk of contracting tuberculosis by eating the meat of tuberculous animals is not so great as generally believed. Imperfect inspection makes the risk greater than it should be, a risk which concerns especially those who buy cheap meat and eat such commonly infected organs as the lungs, udder. and mesenteries. The relative infrequency of tuberculosis in all but cattle and pigs makes them the only food animals at all dangerous to man. The flesh of tuberculous animals is not necessarily infectious, and when so, in many instances, it is due to secondary contamination by means of the knife, butcher's cloth, and dressing. Cooking is sufficient ordinarily to destroy tubercle bacilli on the outside of a roll or joint, but not in the centre. Digestion, salting, or smoking have little or no disinfecting effect. However, the rarity of tuberculous foci in the flesh, even in advanced cases, makes ordinary cooking efficient if the thick rolls and joints are avoided and the meat is well done.